Spatial Distributions and the Notion of Site Typology

By
Sean P. Fitzell and Dennis Knepper
Cultural Resources Department
Parsons
10521 Rosehaven Street
Fairfax, Virginia, 22030
ph: (703) 218-1499
email: sean.patrick.fitzell@parsons.com
dennis.knepper@parsons.com
web: www.parsons.com

Paper presented at the Society for American Archaeology Meetings, Philadelphia, April, 2000

Spatial Distributions and the Notion of Site Typology

Central to traditional archaeological interpretation has been the categorization and typing of sites based upon observed trends in artifact frequency, diversity, and/or spatial distribution. From these trends, sites are grouped usually on the basis of assumed function. Examples of such functional types include procurement sites or reduction centers; hunting camps; and domestic sites. These sites may also be categorized by size: small sites with lower artifact densities and covering more discreet area, are frequently termed "micro-band" camps in the Middle Atlantic region. In contrast, those with high artifact densities, covering more area, and containing more diversified features are referred to as "macro-band" camps. Notions of site-types such as these have become entrenched to the point that the models are now often viewed uncritically as virtually self-evident. However, a growing understanding of the complexity of the archaeological record provides caveats for simple interpretations of site type. The processes of site formation are numerous and varied, influenced by both cultural and natural agents. It is important, for example, to distinguish between single episode events, such as knapping clusters that result in high numbers of artifacts, and cyclical events such as repeatedly utilized fire hearths, which may have longer use lives without producing substantial increases in artifacts. These distinctions are critical as they imply notions of intensive versus extensive use of a site. Adding to the complexity, natural processes including sedimentation rates and post-depositional forces are important in the formation of an archaeological site, as they may influence the location, density, and condition of artifact deposits.

Hickory Bluff is an example of a complex site with artifact assemblages that are extensive, both in quantity and in their spatial distributions. This complete data set may be useful in reevaluating traditional notions of site typology. Chronological information gathered from radiocarbon dates, ceramic typology, and diagnostic projectile points illustrate that the site was repeatedly occupied throughout a substantial segment of prehistory. Yet there was little clear evidence of vertical stratification within the site with which to easily isolate specific occupations. Cultural debris spanning as much as 4,000 years was contained within a sediment package that averaged only 30 cm thick. However, the open area excavations allowed for large sections of the site to be examined for evidence of horizontal separation of its components. Comparative distributions of features, diagnostic artifacts, and non-diagnostic artifacts were employed to interpret site structure. These spatial analyses will help in determining patterns and differences in site use through time.

To provide a perspective on the horizontal extent of the site, we have constructed a three-dimensional image of the project area using topographic data, and overlaid the distribution of the archaeological excavations (Figure 1). The region shown here measured about 200 by 200 meters. The excavation units were 1 meter squares, and are shown in red. The gray line in the upper right is an area where the plow zone was mechanically stripped off to sample feature distribution away from the core of the site.

Artifact distribution across the site area varied greatly in intensity and in terms of component assemblages. A map of the distribution of chronologically diagnostic projectile points demonstrates the wide range of time periods represented at the site (Figure 2). It suggests the apparent complexity of occupation, as a mixture of chronological periods is represented in most areas. However, within the complexity of this and other data sets from the site, there is patterning that provides information about site structure and occupation, sequences that can help us reconstruct prehistoric activity in this locale.

Our discussion will focus on the central part of the site, as outlined on the map. This area comprised the largest open area excavation at the site, consisting of 308 contiguous 1 meter squares, and therefore provides the most complete and uninterrupted spatial data.

Within this area, 48 individual and discrete features were encountered. For the purposes of this presentation, they have been divided into 3 broad groups: small basin features, large basin features (including both shallow and deep varieties), and fire-cracked rock clusters of varying size. As this map indicates, there was extensive overlap among the features of all types, suggesting repeated use of the area (Figure 3). This overlap made determining associations between the features, which would be indicative of site structure, extremely difficult. This problem was compounded by the fact that while many features did not contain chronologically diagnostic artifacts, those that did, often contained material that was mixed in age.

One particularly abundant form of chronological information at the site consisted of ceramic sherds. Of over 6,200 sherds recovered during the excavations, approximately 1,600 could be assigned to one of eight major wares known to the region. Spatial analyses of the distributions of each ware were conducted and a series of maps was drawn to illustrate the results of the cluster analyses – the maps show artifact density as contour lines. This map illustrates the distribution of all Clay-tempered wares (Figure 4). Nine distinct clusters are observed stretching from the south to the north of the excavation. Drawing ellipses around the most prominent clusters provides a summary indication of where activity occurred that was associated with these wares (Figures 5).

Similar analyses were carried out for each of the major ceramic wares at the site, and a composite map was constructed for the main sub-periods of occupation (Figures 6 & 7). As is evident in this map, there were both isolated and overlapping clusters of Early Woodland ceramics. Clay-tempered wares dominated the Middle Woodland ceramic assemblage and although they showed clusters, some blending and overlap occurred along the edges and between the main clusters. Late Woodland ceramics were much less frequent across the entire site, and tended to be found within the organic A-horizon, or disturbed contexts. As a result, they did not provide enough data for similar cluster analysis and are not displayed here.

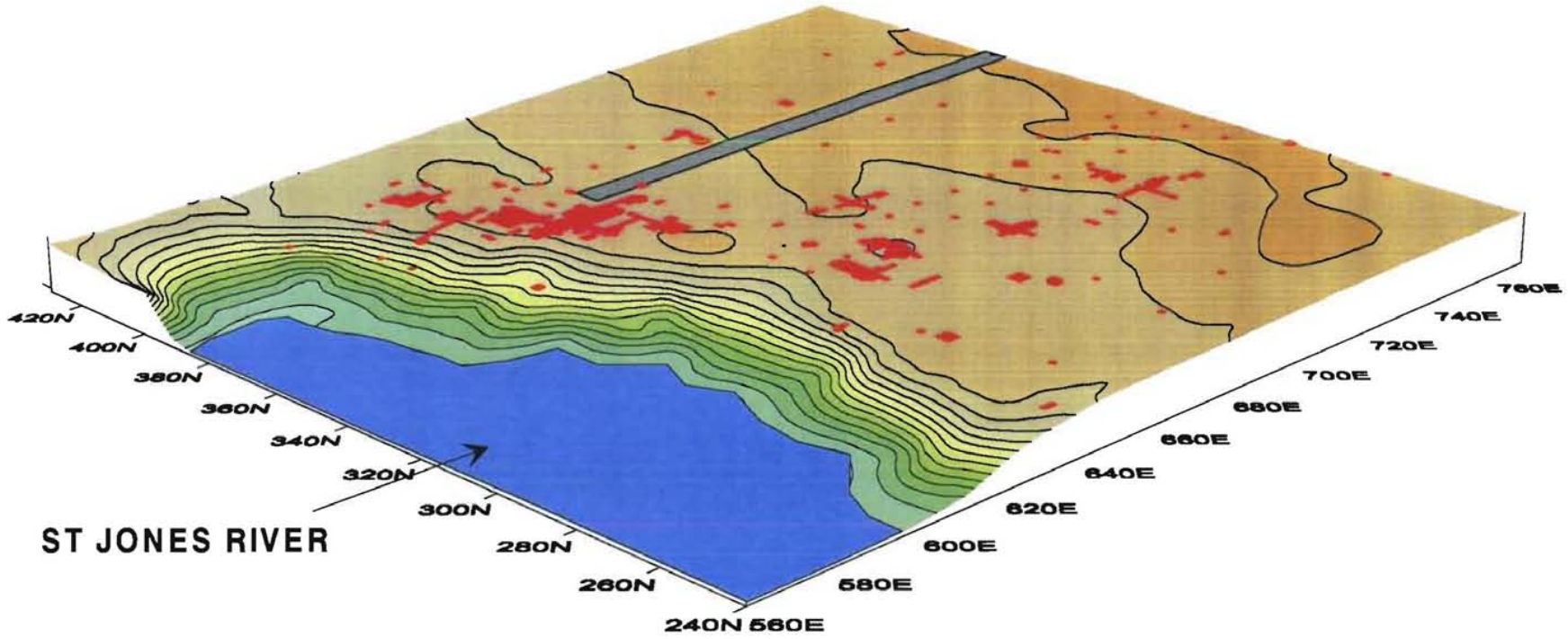
From these maps of the ceramic assemblages, some temporally and horizontally discrete activity areas are evident. At the same time, adjacent areas appear heavily reused, with temporally diverse ceramic wares being found in close spatial association (Figure 8). However, the ceramic assemblages represent only one of the chronologically significant data sets available at the site.

Radiometric data, which was generally obtained from feature proveniences, provided dates ranging from the 19th century AD to 4200 BP. In this portion of the site, though, none of the dates were within, or close to the accepted ranges of the ceramic clusters with which they were spatially associated. As a result, the radiometric dates comprised an incongruous data set. The disparity between the ceramics and radiocarbon dates is likely an indication of repeated site use, as well as of the natural movement of carbonized material within the shallowly buried cultural deposits.

Another level of complexity in the data is evident when projectile point distributions are overlaid on the ceramic clusters already identified. From this map, it can be observed that point types associated with different time periods are found in close horizontal proximity, even occurring within the same 1 meter square (Figure 9). Moreover, many point types are found within clusters of diagnostic ceramics with which they do not match chronologically.

The complexity presented by the spatial data at Hickory Bluff does not provide simple answers to the question of site structure. In situations such as these, words like palimpsest and overprinted are often used to describe depositional contexts. Clear associations of activity areas, feature types, and diagnostic artifacts that would suggest a large-scale structured site, were not found consistently at Hickory Bluff. However, some evidence of site structure is contained within the identified ceramic clusters. The overlap seen in Early Woodland ceramic wares, for example, as well as the abundance of commingled Middle Woodland wares, offers a pattern that is likely the result of intensive, cyclical re-use of the landscape, rather than large-scale occupations of relatively short duration. The intersecting feature types, as well as overlapping chronological data, are all suggestive of smaller repeated occupations. Evidence from the site suggests that the landscape was intensively utilized, and this has resulted in an often confusing and contradictory array of data. Many sites along the St. Jones and other Coastal Plain drainages, with a similar presence of dense artifact assemblages from multiple time periods, and high frequencies of diverse features, have been interpreted as macro-band settlements. Careful mapping of the available data from Hickory Bluff has allowed for a more focused view of the complexity of this particular site. The spatial distribution analyses, which indicated the horizontal mixing of temporally diagnostic artifacts, as well as the overlap of features, is more likely the result of the cyclical re-use of the landform by relatively small groups. The context of the Hickory Bluff site is similar to that of other large sites along the St. Jones drainage in terms of size and layout, in addition to artifact and feature diversity and distribution. Thus, it may be that a re-evaluation of site structure interpretations in similar settings, utilizing new analytic tools available, will be useful in providing a fuller understanding of regional settlement patterns.

Hickory Bluff (7K-C-411)
Surface Topography and Archaeological Excavations



Excavation Units Shown in Red
Backhoe Test Strip Shown in Gray

Figure 1

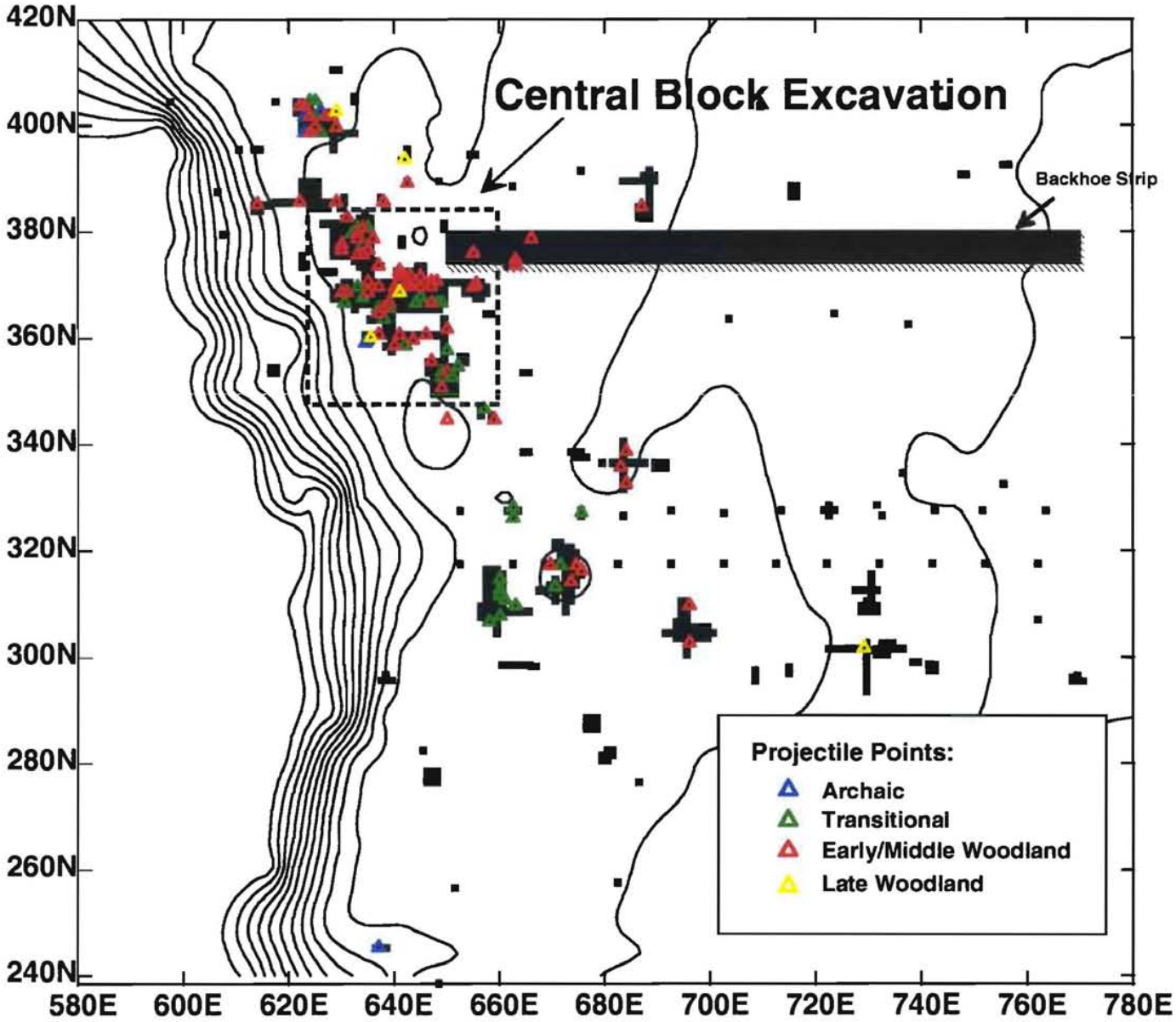

Central Block Excavation
Backhoe Strip
420N
400N
380N
360N
340N
320N
300N
280N
260N
240N
580E
600E
620E
640E
660E
680E
700E
720E
740E
760E
780E
Projectile Points:
Archaic
Transitional
Early/Middle Woodland
Late Woodland

Figure 2

Northwest Quadrant Large Block Feature Locations Schematic

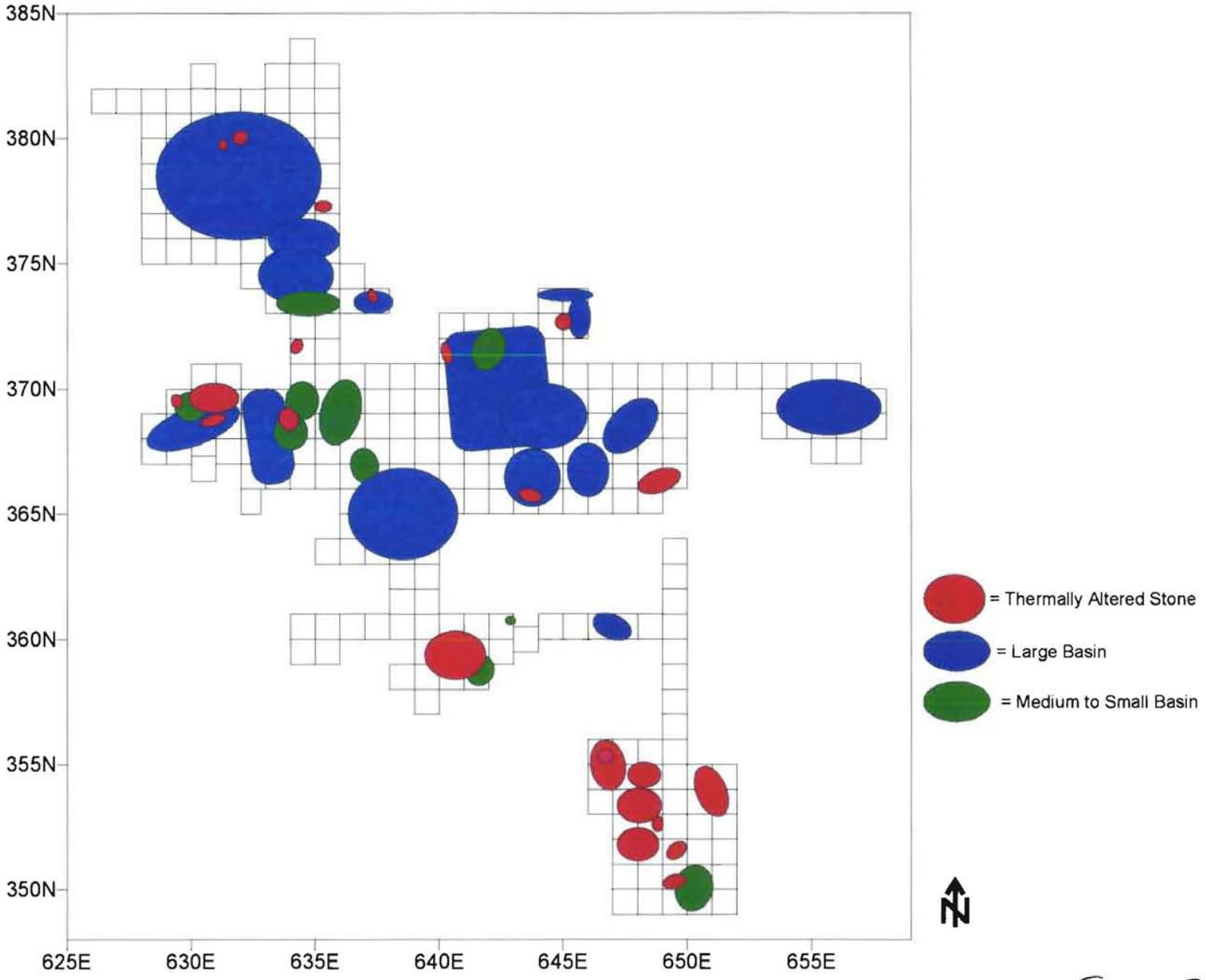


Figure 3

7K-C-411: Hickory Bluff

Northwest Quadrant Large Block

All Clay-Temepred Ceramics (E-Horizon and Features)

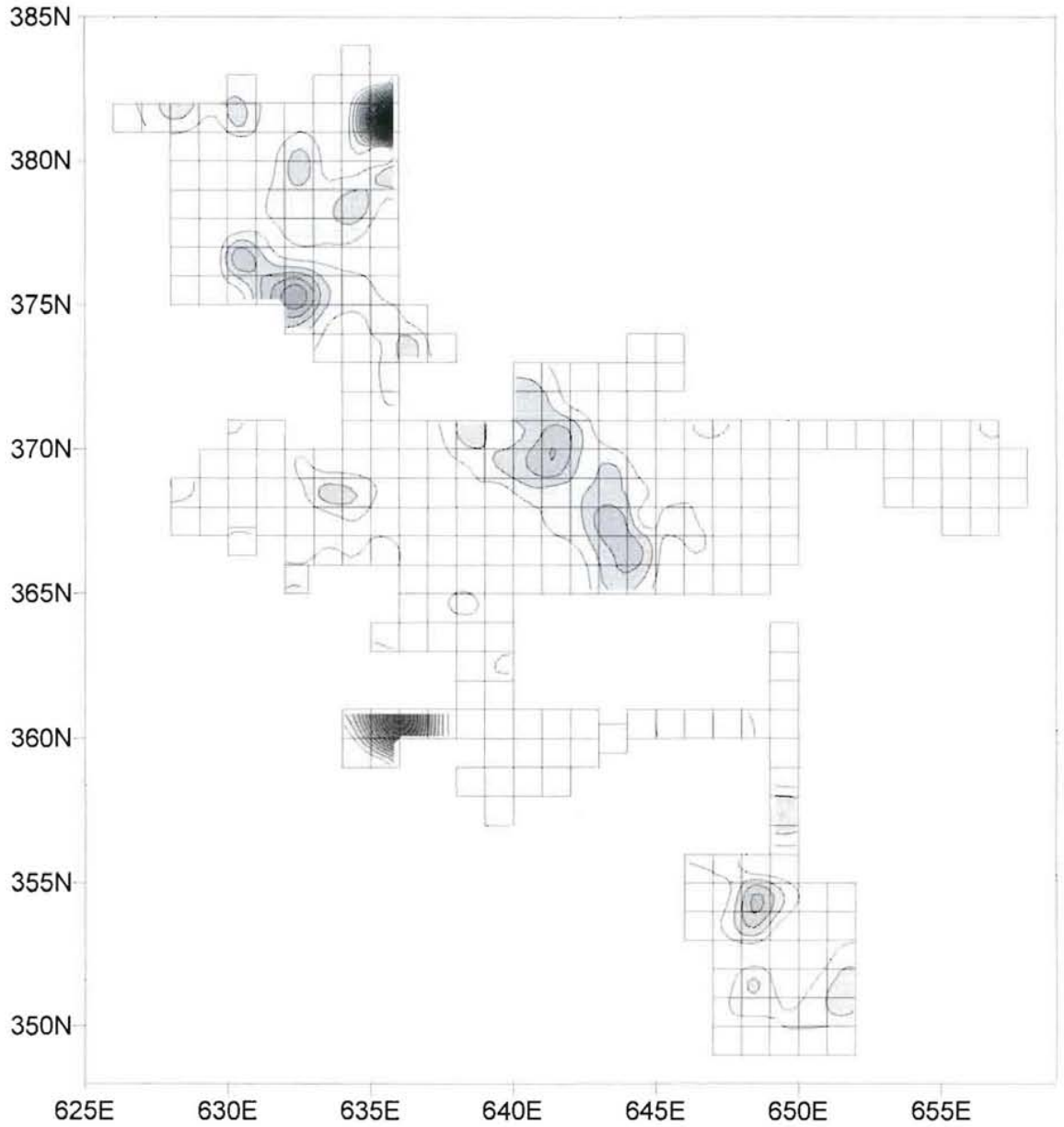
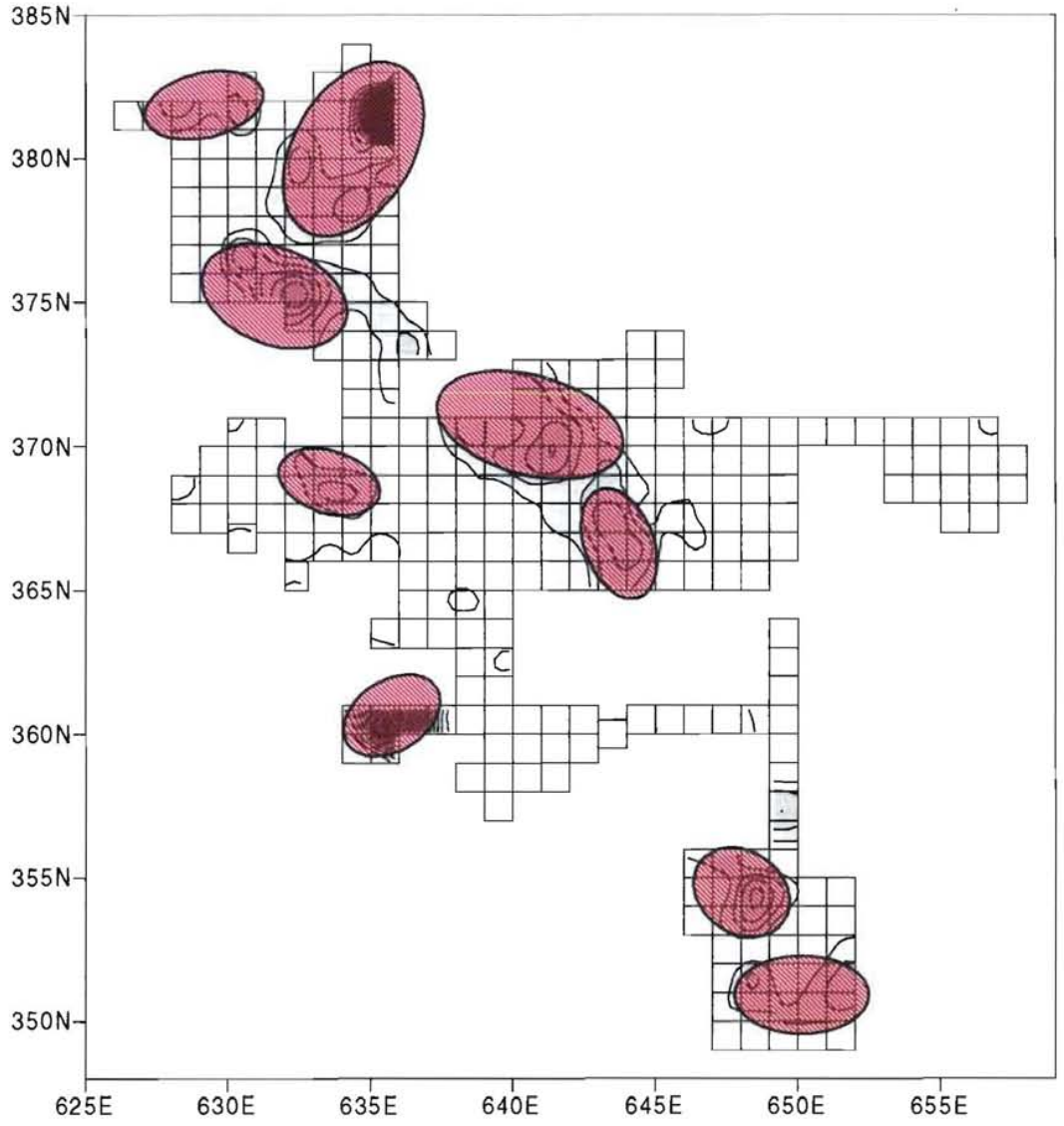


Figure 4

Northwest Quadrant Large Block

All Clay-Temepred Ceramics (E-Horizon and Features)



7K-C-411: Hickory Bluff

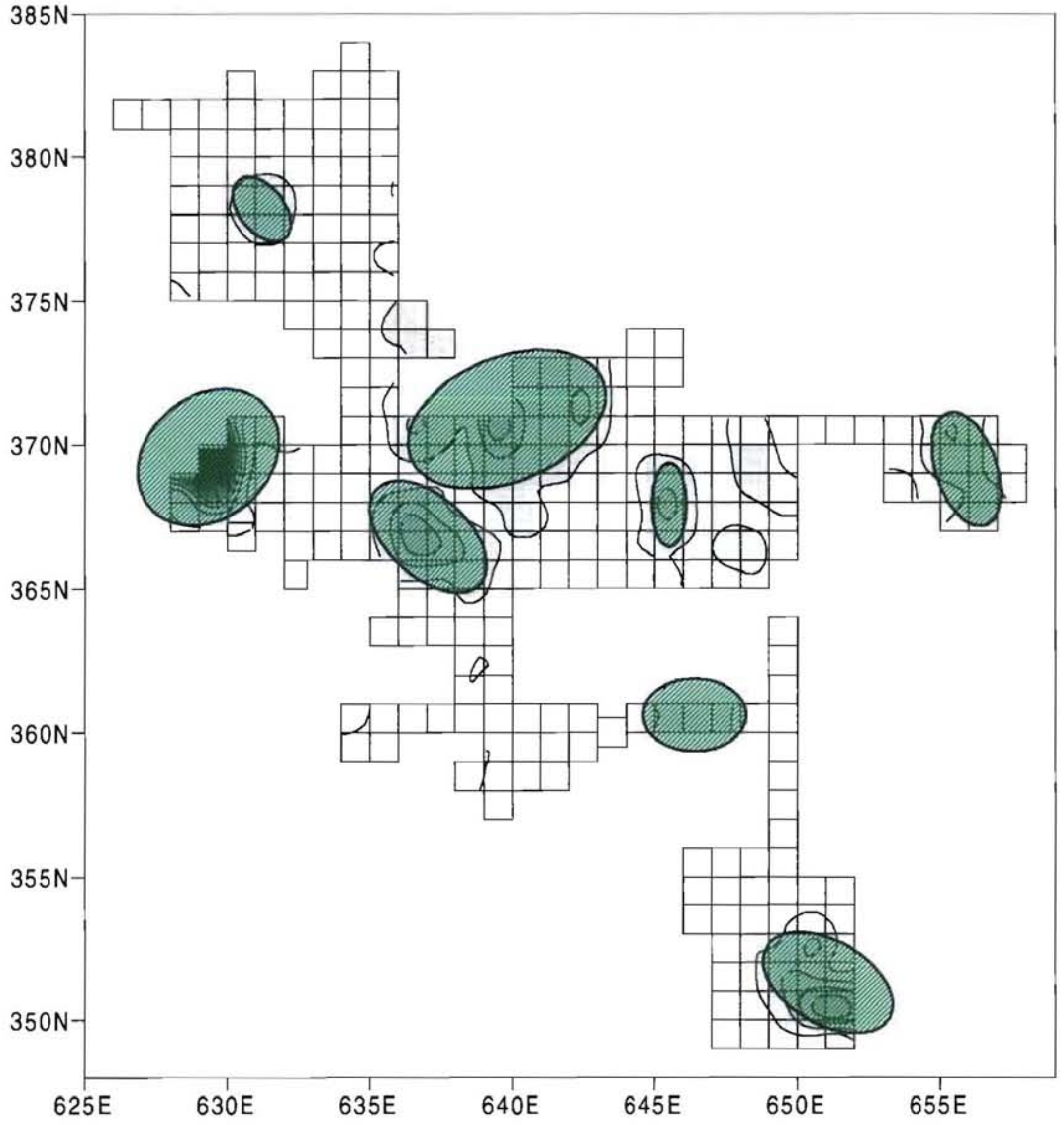
3/13/00

all clay.srf

Figure 5

Northwest Quadrant Large Block

All Steatite-Tempered Ceramics (E-Horizon and Features)



3/13/00

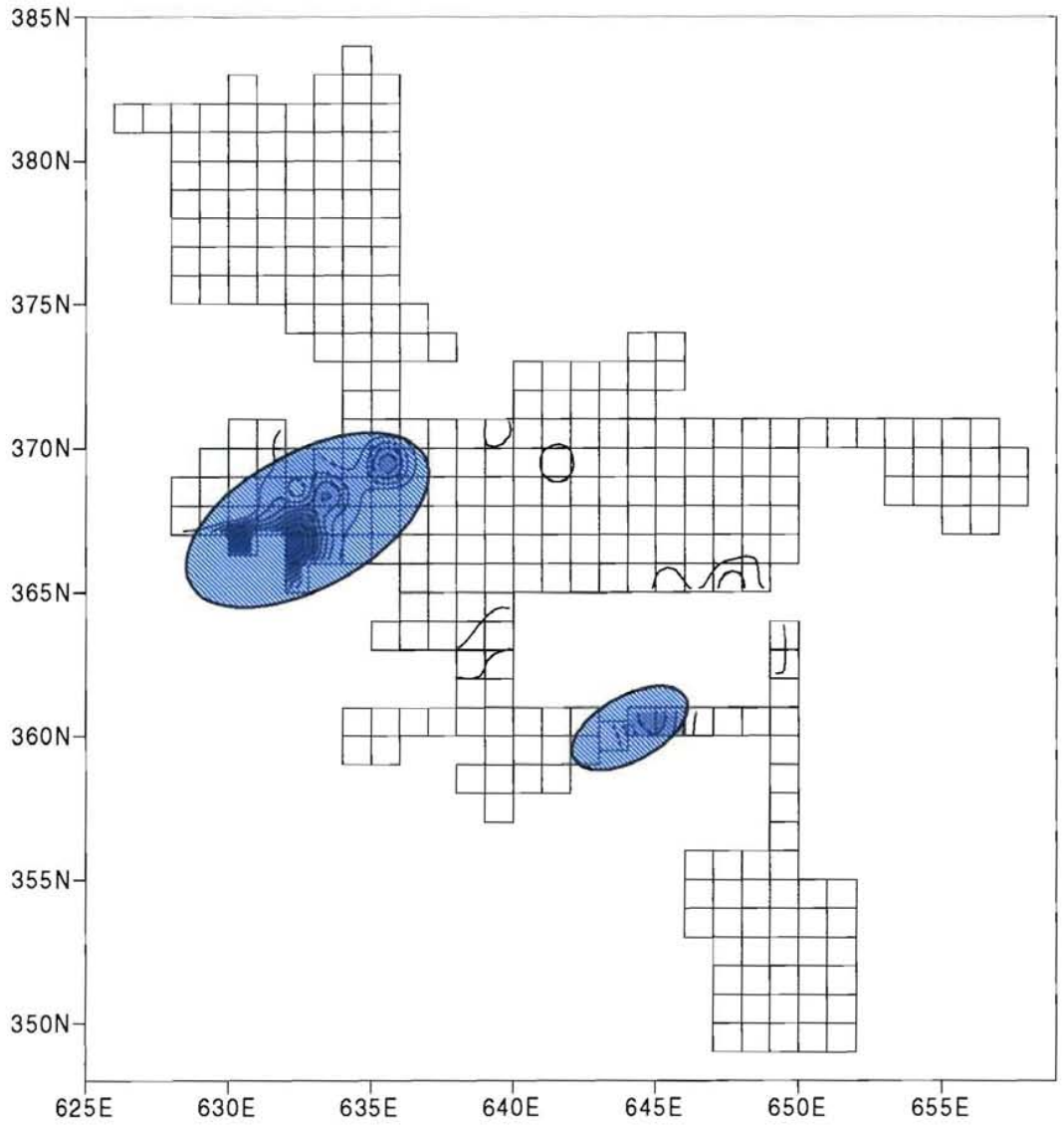
all steat.srf

7K-C-411: Hickory Bluff

Figure 6

Northwest Quadrant Large Block

All Wolfe Neck (E-Horizon and Features)



3/13/00

all wolfe.srf

7K-C-411: Hickory Bluff

Figure 7

Northwest Quadrant Large Block

Overlay of Early-Middle Woodland Ceramic Ware Distributions

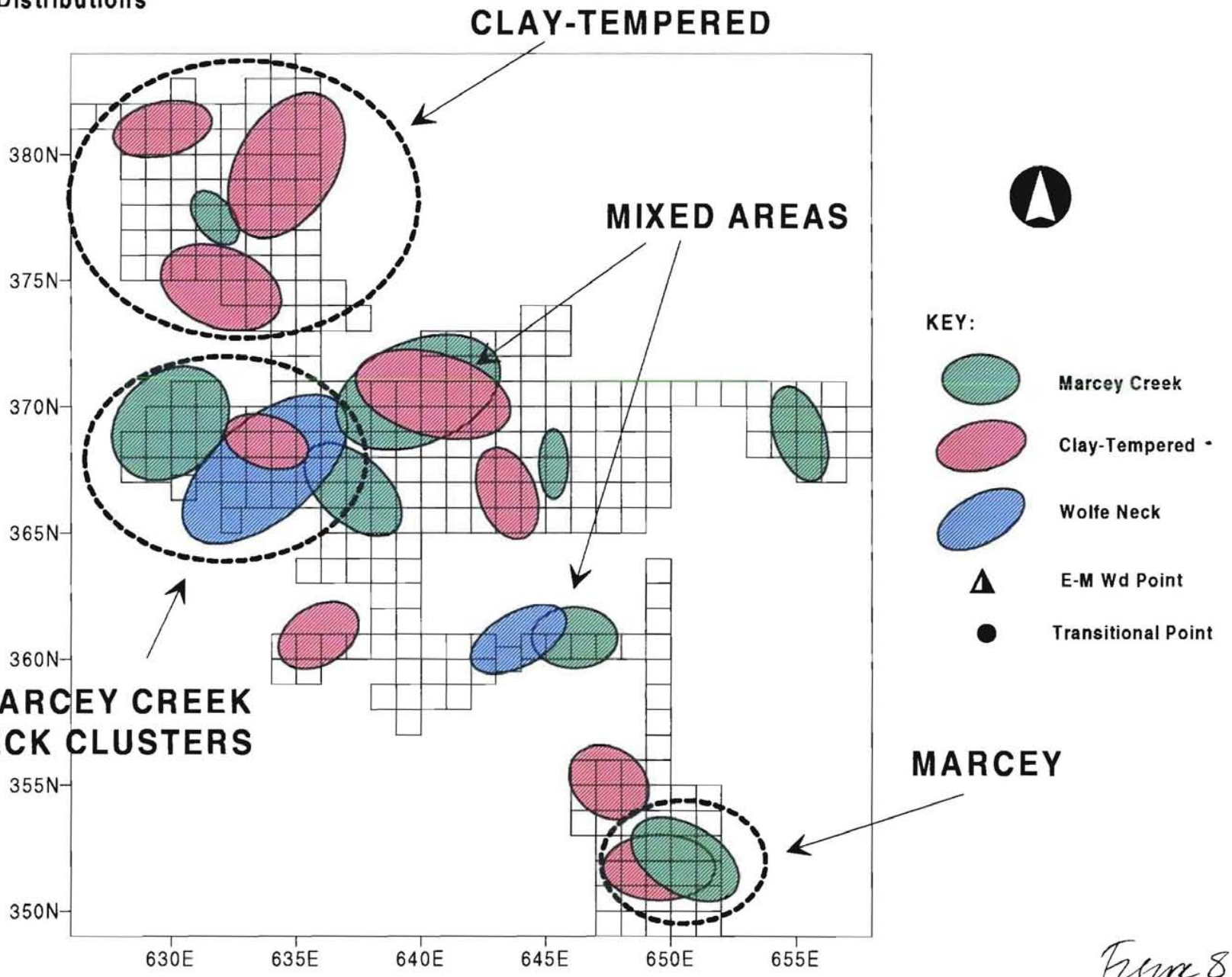


Figure 8

3/14/00

7K-C-411: Hickory Bluff

ceramic-point overlay.srf

Northwest Quadrant Large Block

Overlay of Early-Middle Woodland Ceramic Ware Distributions

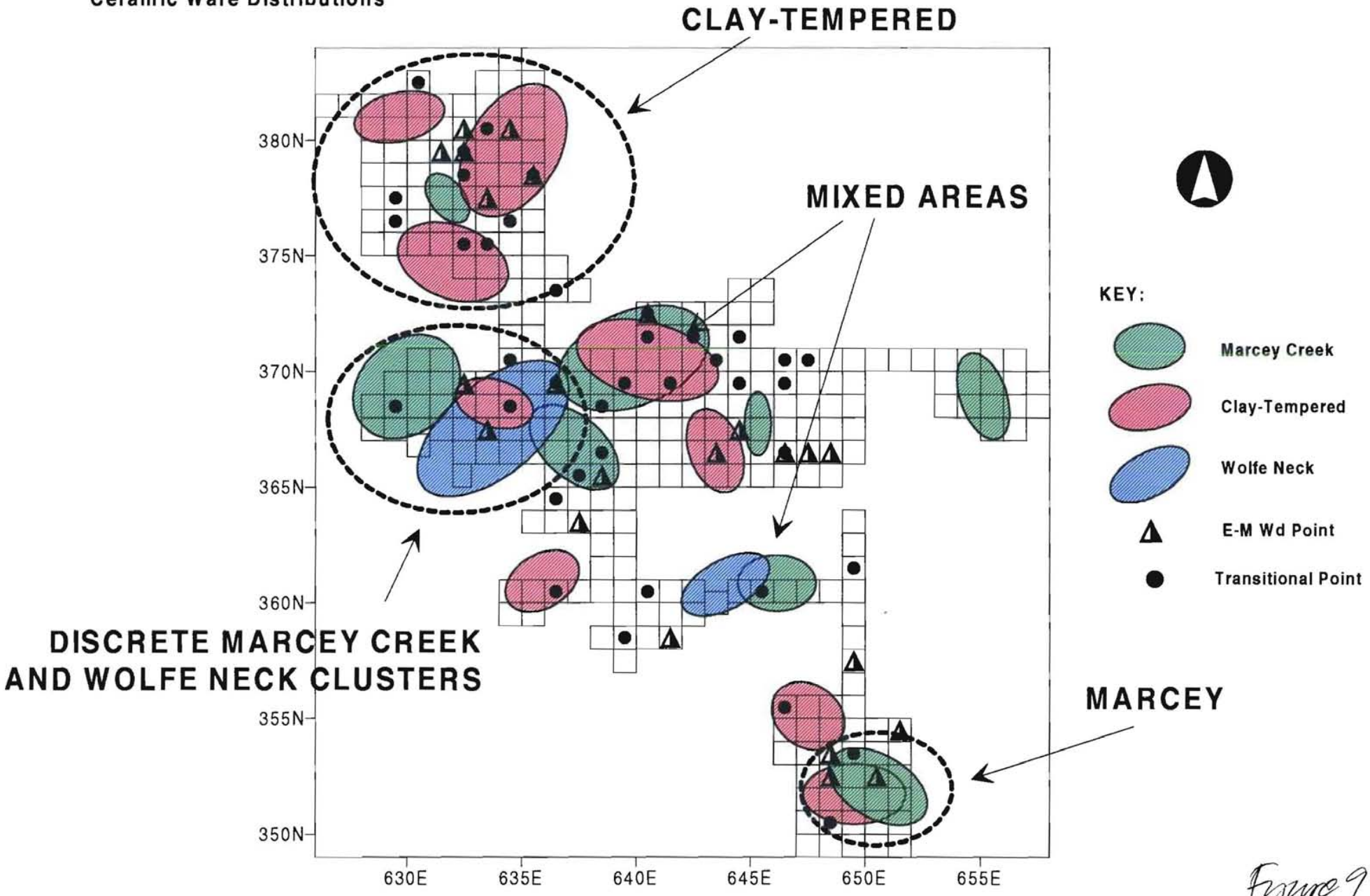


Figure 9

3/14/00

7K-C-411: Hickory Bluff

ceramic-point overlay.srf